



**STRATEGY
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DECISION MAKING IN THE INFORMATION AGE

BY

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USAWC STRATEGY RESEARCH PROJECT

**DECISION MAKING
IN THE
INFORMATION AGE**
A Case for updating the
Military Decision Making Process

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The views expressed in this academic research paper are those of the author and do not necessarily reflect the official policy or position of the U.S. Government, the Department of Defense, or any of its agencies.
Written in partial fulfillment of the requirements for completion of the US Army War College and Military Fellowship at the Massachusetts Institute of Technology

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ABSTRACT

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In the age of instant communications and widespread access to sensors commanders in the field have unprecedented access to a wide range of information from the weather to the enemy order of battle. As these devices become more sophisticated and soldiers' ability to manipulate them grows more refined, the Common Operational Picture displayed on computer screens will enable commanders to better focus their forces and seize fleeting opportunities to defeat enemy forces. Despite this growing access to digital information devices in the Legacy and Interim Force the US Army's Military Decision Making Process, MDMP, has not changed. Our current MDMP of seven steps; Receive the Mission, Mission Analysis, Course of Action Development, Course of Action Analysis, Course of Action Comparison, Course of Action Approval, and Orders Production, are tried and true having been executed on the tops of jeep hoods at training centers to overheated tents during the Gulf War. Generations of officers know where to look in orders for their unit tasks, how to translate those tasks into guidance for their own subordinates, and where and when to accelerate the process when necessary. The solid procedure of developing, analyzing, and comparing courses of action for our operations can be translated into action in all of our units. The use of these steps, taught in our service schools and reinforced by observer/controllers at our Training Centers has resulted in a widely recognized process that anyone can execute. War plan development briefings include as the opening comment, "Sir we are this step in the process." In a world of paper maps and acetate graphical overlays, this process made absolute sense. In the growing world of knowledge based warfare and digital information devices the analog procedure does not make sense. The seven steps of the process, while not intended to be a doctrinaire and inflexible approach to making a decision, has in fact become sequential in the practice of making a decision. Application of this sequential process is too difficult in the face of a common operational picture that is provided by computers. These devices argue not for the current way faster, but a new method of taking better decisions. Doctrine is the common basis for operations in the

US Army, but as yet there exists no doctrinal approach to the incorporation of the increasingly widespread Command, Control, Computers, Communications, Intelligence, Surveillance, and Reconnaissance (C4ISR) devices being fielded in the Legacy, Interim, and ultimately Objective Force of Army Transformation into the Army's MDMP.

The monograph begins with an explanation of a proposed updated decision-making process. The term "analog" is used to describe the current doctrine for decision making while the term "digital" is used when describing the proposed new process. Following the explanation of the updated decision-making process there is an examination of existing US Army decision-making doctrine. The development of the logical, systemic approach to analog decision-making will be explored in a historical review of Army doctrine. The discussion then reviews the Interim Force Organizational & Operational Concept and the development of unit specific digital MDMP to meet this doctrinal need in light of no official guidance in the form of Army doctrine. Finally, there will be a comparison of the analog MDMP to the digital MDMP.

The conclusion shows that given the widespread promulgation of digital decision support devices, communications and computers, as well as the total US Army digitization effort the time to update the Military Decision Making process is now. The current MDMP was never supposed to be used as a sequential tool in execution, merely as a guide. Doctrine writers wanted to outline the total process for widespread use by Army units regardless of the experience of the staff. Every staff could follow a checklist and develop a good course of action for a commander's decision. The fact is the MDMP IS used sequentially and units risk criticism by Observer/Controllers at our Combat Training Centers if they do not articulate the steps and how the unit adhered to doctrine. This adherence to a sequential process does not lend itself to rapid, quality decision-making in a digitally enabled unit. The recommendation, based on the monograph, is that in the next update of the Army's Field Manual 5-0, formerly called FM 101-5, the digital MDMP be included as a decision-making annex for digitally equipped units. Ultimately, as the entire Army becomes digitally enabled, the annex will become the only decision-making doctrine.

PREFACE

This effort began on 8 July 2000 when Major General James M. Dubik looked at me during a staff meeting and gave me the following task, "Kevin, the systems architecture in the Interim Brigade Combat Teams will allow a broader range for decision making regarding the enemy as well as friendly forces. Revise the Military Decision Making Process (MDMP) for parallel and collaborative development over a distributed area." Just like that. Revise a process that our Army has used in one form or another for at least 95 years. This monograph will outline the procedure used to reach a proposal for revisions to the MDMP, the "other" points of view to which we listened, and the reasons we believe the MDMP, as hallowed as it is in our doctrine, should change now at the dawn of the 21st Century. I am grateful for the broad trust General Dubik placed in my superb team of professionals, as well as myself. The team consisted of: Lieutenant Colonels Brian Stapleton and George Juntiff, and Majors Bruce Antonia, and Phil Logan. These officers contributed to our Army through their intellectual abilities and courage in facing the "slings and arrows" of fellow officers who thought we were "dangerous." Their work should not be forgotten, but in the case of this monograph any errors made or opinions offered are mine alone. I am also grateful for the thoughtful reviews of this work done by Colonel (ret.) Bill Rice and Colonel Chris Paparone.

LIST OF ILLUSTRATIONS

FIGURE 1. PROPOSED MODEL OF THE UPDATED MDMP.....	4
FIGURE 2. CURRENT MODEL OF THE MDMP.....	10
FIGURE 3. NESTLE PRODUCT DESIGN MODEL.....	13
FIGURE 4. COMPARISON OF MODELS.....	18
FIGURE 5. LEGACY – DIGITAL RECEIVE MISSION COMPARISON.....	20
FIGURE 6. COA- SCHEME OF MANEUVER COMPARISON.....	21
FIGURE 7. REFINE-SYNCHRONIZE SELECTED COA.....	22
FIGURE 8. COMMANDER'S APPROVAL COMPARISON.....	24

TABLE OF CONTENTS

ABSTRACT.....	ii
PREFACE	iv
LIST OF ILLUSTRATIONS.....	v
DECISION-MAKING IN THE INFORMATION AGE.....	1
INTRODUCTION.....	3
PROPOSED DECISION MAKING MODEL.....	4
REVIEW OF CURRENT DECISION MAKING DOCTRINE.....	8
LEGACY AND INTERIM FORCE DIGITIZATION EFFORT.....	13
COMPARISON OF CURRENT AND PROPOSED DECISION MAKING PROCESS.....	15
CONCLUSION.....	26
ENDNOTES.....	31
BIBLIOGRAPHY.....	35

DECISION MAKING IN THE INFORMATION AGE

A Case for Updating the Military Decision Making Model

Introduction

In the age of instant communications and widespread access to sensors commanders in the field have unprecedented access to a wide range of information from the weather to the enemy order of battle. As these devices become more sophisticated and soldiers' ability to manipulate them grows more refined, the Common Operational Picture displayed on computer screens will enable commanders to better focus their forces and seize fleeting opportunities to defeat enemy forces. Despite this growing access to digital information devices in the Legacy and Interim Force the US Army's Military Decision Making Process, MDMP, has not changed.

Our current MDMP of seven steps; Receive the Mission, Mission Analysis, Course of Action Development, Course of Action Analysis, Course of Action Comparison, Course of Action Approval, and Orders Production, is tried and true having been executed on the tops of jeep hoods at training centers to overheated tents during the Gulf War. Generations of officers know where to look in orders for their unit tasks, how to translate those tasks into guidance for their own subordinates, and where and when to accelerate the process when necessary. The solid procedure of developing, analyzing, and comparing courses of action for our operations can be translated into action in all of our units. The use of these steps, taught in our service schools and reinforced by observer/controllers at our Training Centers has resulted in a widely recognized process. War plan development briefings include as the opening comment, "Sir we are at this step in the process." In a world of paper maps and acetate graphical overlays, this process made absolute sense. In the growing world of knowledge based warfare and digital information devices the analog procedure does not make sense.

The seven steps of the process, while not intended to be a doctrinaire and inflexible approach to making a decision, have in fact become sequential in the practice of making a decision. Application of this sequential process is too difficult and time consuming in the face of a common operational picture that is provided by computers. These devices argue not for the current way faster, but a new method of taking better decisions.

Doctrine is the common basis for operations in the US Army, but as yet there exists no doctrinal approach to the incorporation of the increasingly widespread Command, Control, Computers, Communications, Intelligence, Surveillance, and

Reconnaissance (C4ISR) devices being fielded in the Legacy, Interim, and ultimately Objective Force of Army Transformation into the Army's MDMP.

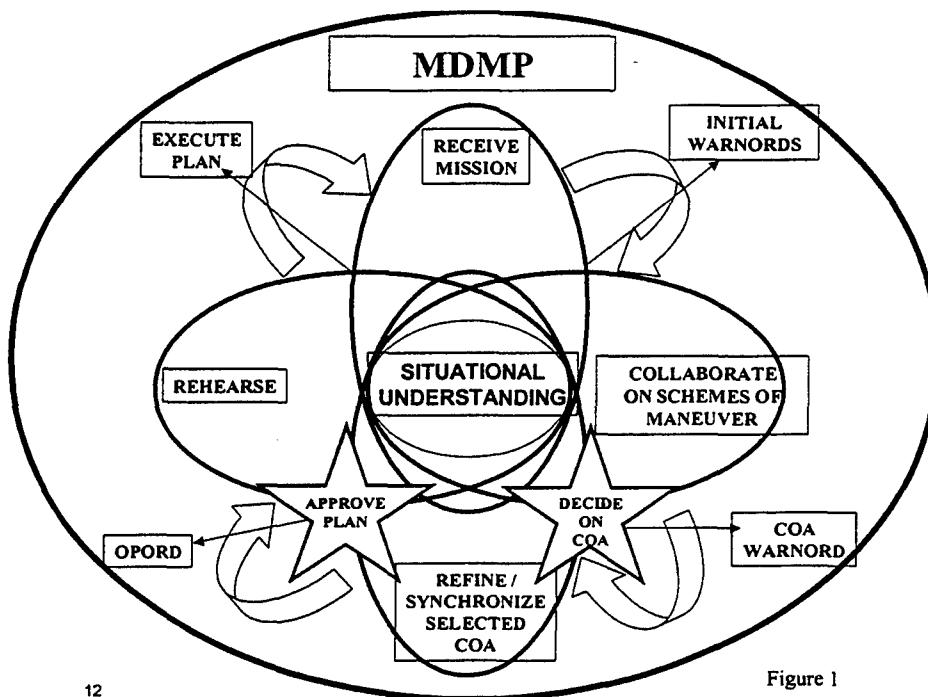
The Chief of Staff, Army, GEN Eric Shinseki, outlined the basis for Army Transformation in his vision statement of October 1999. In this statement GEN Shinseki said: "**Transformation.** Army Transformation represents the strategic transition we will have to undergo to shed our cold war designs in order to prepare ourselves now for the crises and wars of the 21st Century. " His salient points on the Interim Force are outlined below.

- The Army is transforming now to meet the needs of today and the future.
- Transformation is more than technology -- it's about training soldiers and growing leaders who are agile, versatile, adaptive.
- The Interim Force bridges an operational gap that has existed since the end of The Cold War and lays the doctrinal foundation for the Objective Force.
- The Army, all aspects, are transforming now to meet the requirements of today and the future - - a long term process; we are changing our culture¹

In order to shed our Army's cold war designs and change our culture it is vital to look at our doctrine. Doctrine is the engine of change within our Army. The requirements of the digital age, which is upon us now, demand an updated approach to taking decisions. The purpose of this monograph is to outline and explain a proposed updated decision-making process. The terms "analog" and "digital" are used in the monograph to describe the current doctrine for decision-making and the proposed new process, respectively. The term "digitization" is used to describe the ongoing Army effort to incorporate new digital command and control devices into the field Army command and control system. Following the explanation of the updated decision-making process there is an examination of existing US Army decision-making doctrine. The development of the logical, systemic approach to analog decision-making will be explored in a historical review of Army doctrine and business literature. The discussion then reviews the Interim Force Organizational & Operational Concept and the development of unit specific digital MDMP to meet this doctrinal need in light of no official guidance in the form of Army doctrine. Finally, there will be a comparison of the analog MDMP to the digital MDMP.

Proposed Decision Making Model

The range of digital devices the Army is fielding enables a decision-making process that is parallel and collaborative. For the purposes of this monograph I define the terms as: Collaborative planning is the real time interaction of commanders and staffs at all echelons, using near real time updates of shared databases and a Common Operational Picture (COP). Collaborative planning will enhance the understanding of the commander's intent and guidance throughout the force and decrease the time for all echelons of command to complete a plan or order. Parallel planning is those actions taken by the staff at all echelons that run nearly simultaneously. Staffs at every echelon will have access to distributed databases that build a COP and electronic linkages to organic and non-organic centers of expertise. Parallel planning is triggered by; the receipt of a warning order from a higher headquarters, commander to commander or staff to staff coordination or, through situational understanding, anticipation of an action/mission. The proposed model for parallel and collaborative decision-making is below.



12

Figure 1

The proposed digital Military Decision-Making Process (MDMP) has six actions (Figure 1) that are undertaken in a parallel and collaborative mode. The actions described below are not necessarily taken sequentially; rather they are completed in

concert with all echelons of command. Because of the anticipatory nature of the process, the actions often overlap one another. The actions are described individually to ensure understanding.

The staff updates network databases continuously to provide important inputs for the MDMP. The commander and each staff section do their own updates. Databases are continuously revised when important new information is received or when the situation changes significantly. They are conducted not only to support the planning process but also during mission execution.

Action 1. Update / Ensure Situational Understanding.

Action 2. Receive Mission

Action 3. Collaborate on Schemes of Maneuver.

Action 4. Refine / Synchronize a Selected COA.

Action 5. Commander's Approval of Plan.

Action 6. Rehearse

The commander and staff must understand the situation throughout the planning process to facilitate anticipatory decision-making. Situational understanding is at the very core of the MDMP and is an ongoing process that begins with an alert prior to receipt of an impending mission and is constantly updated. It is described as the first action not only because it begins prior to receiving a mission but also because it is in the environment of situational understanding that the rest of the MDMP occurs. Situational understanding is achieved through an analysis of the information gathered by the myriad of sensors and collectors that new technologies allow us to maneuver and monitor.

Receiving a mission, action 2, usually is the result of a collaborative process followed by an order issued by a higher headquarters. Anticipation of a mission stems from good situational understanding and the ability of the commander and/or his staff to anticipate what to do next. The commander and his staff are able to better anticipate new missions because of the parallel and collaborative nature of the network. In other words, since the commander and his staff have the ability to get the same operational picture as the higher headquarters, they should be able to better anticipate future missions.

As soon as a new mission is received many actions begin in a simultaneous manner. The unit's operations section issues a warning order to the staff and subordinate units to begin the parallel and collaborative MDMP alerting them of the

pending planning process. Commanders and staffs receive and post the most recent data of the COP and begin preparations for the collaborative scheme of maneuver development.

Collaboration on schemes of maneuver encompasses the development, analysis, and comparison of possible schemes of maneuver. The collaborative and parallel processes of scheme of maneuver development assists commanders and staff officers to reduce time constraints by allowing them to see higher headquarters scheme of maneuver development and vice versa. The collaborative nature of the network allows more subject area experts to determine the validity, strengths, and weaknesses of a particular course of action. The process starts with the intelligence officer giving a picture of the enemy situation; then the commander gives his visualization of a possible scheme of maneuver. Then, collaboratively, subordinate commanders and selected staff members jointly analyze and suggest alternative schemes of maneuver. It is essential that the rest of the staff and subordinate staffs watch and understand this process. War gaming associated with this action ranges from brainstorming on the pluses and minuses of a particular scheme of maneuver to using reach operations for modeling support.² As a result of this effort, one collaborative course of action is developed which the staff will refine and synchronize through detailed, focused war-gaming into the concept of the operation.

The entire staff participates in the final war game process. This effort is the heart of synchronizing and refining the COA selected at the end of the collaborative process. The end state of this action is a synchronized plan that accomplishes the mission with minimum casualties while positioning the force to retain the initiative for future operations.

Upon completion of its analysis, the staff presents the detailed plan to the commander for approval. The Chief of Staff highlights any changes to the COA as a result of the war-gaming process. Subordinate commanders are present at the decision brief or they are linked through the network. Their participation enhances the parallel and collaborative MDMP.

After the decision briefing, the commander takes a decision on the plan. Since he is involved throughout the process, he should make only minor changes if any at all. He then issues any additional guidance on priorities for support, sustainment, orders preparation, rehearsal, and preparation for mission execution.

Rehearsals of the plan/operation take place as required and in accord with the time available. The digital systems in the force permit wide scale digital rehearsals over the established network within a unit. Collaboration on the plan also allows for more focused, small unit rehearsals to refine the details of combat actions.

The proposed parallel and collaborative decision-making process is based on the ever-increasing number and type of digital information and command and control devices in the field Army. Introduction and use of this decision-making model will maximize the power of the devices and the combat power of the unit, as it will ensure a more widespread understanding of the operation.³ To better understand the nature of the proposed model a review of the existing decision-making doctrine is needed.

Review of Current Decision-Making Doctrine

FM 101-5, May 1997, is the Army's doctrinal source for the military decision making process. The manual is currently being updated and is in draft form as FM 5-0, renamed as Army Planning and Orders Production. This manual outlines the doctrinal approach commanders and staffs use to approach difficult situations and come up with logical decisions.

The first reference in an official Army publication concerning decision-making was found glued into the back of a 1910 publication, *Regulations for Field Maneuvers*. Colonel Chris Paparone, in an essay published in *Military Review*, believes that some anonymous soldier wrote notes based on a lecture by Major John F. Morrison as a conceptual answer to tactical decision-making. The notes are shown below.

Your problem may be on the map or on the ground, with or without troops. In any case you must first "estimate the situation." To do this: -- 1. Determine your mission. 2. *Consider the forces--your own and the enemy's. 3. *Consider conditions--both favorable and unfavorable. 4. *Consider what the enemy will probably do. 5. *Consider the terrain in so far as it affects the problem. 6. Consider the different courses open to you to carry out your mission with the advantages and disadvantages of each. 7. Now come to a decision. In problems [sic] a clear, concise statement of what you propose to do and how you propose to do it.

You are now ready to express your decision in the form of an order either written or verbal. This order should fulfill the following requirements:

1. Give your subordinates the necessary information to enable them to understand the situation and to enable them to act intelligently.
2. Assign each subordinate his mission, the part he is to play in the team.
3. Make it clear, concise and definite.
4. In large commands state where you will be.
5. The forms given in the Field Service Regulations as far as they apply should be generally followed.

Hints to be considered in forming your plan or decision: --

1. Make your plan simple. 2. You must bear in mind the necessity of gaining fire superiority. 3. Make your attack enveloping when practicable. 4. Avoid dispersion and unnecessary detachments. 5. Provide for ample reserves properly distributed. 6. Look out for your flanks. 7. Do not be in a big hurry to commit more men than necessary to the action. 8. Remember a victory is apt to be barren without a vigorous pursuit. 9. Take advantage of the ground. 10. Do not neglect your reconnaissance work. 11. Come to a definite decision and then carry it out vigorously -- "don't haggle."

*are not necessarily to be considered in this order

[At the bottom of the same page is another doctrinal reminder, perhaps the first rendering of the Army's enduring "METT-T" acronym]

Captain Finch in his "Estimate of the Tactical Situations and Composing Field Orders" gives: -- 1. The Mission, 2. The Enemy, 3. Our own Troops. 4. The Terrain, 5. Time and Space, 6. Methods, 7. Decision.⁴

Our Army printed Field Service Regulations that contained general guidance on the kind of information staff officers needed to provide for commanders, the final regulation being printed in 1924 and based on lessons learned from the Army's World War experience. In 1932 the first Field Manuals were printed, and marked the Army's shift from field service regulation. The 1932 field manuals are the basis from which our current modern doctrine is based. The doctrine that took our Army through World War II remained general in nature, providing guidance on the types of information the staff should provide commanders. However, the 1932 manual did describe field order format in more detail, and articulated the process for a commander's estimate of the situation. The degree of detail in terms of process really began to take shape in the 1940 Field Manual (FM) 101-5. It also is the first reference to "doctrine" as the guide for staff planning and commander's decision-making.

The development of the steps of our current decision-making process began to take form in the 1968 version of FM 101-5. The McNamara effect, that is a focus on the quantifiable, appeared in the form of flow charts for the steps of decision-making and to show the multiple sections involved in decision-making. The 1972 and 1984 versions of FM 100-5 continued and refined this use of flow charts and diagrams, as well as expanding and explaining the steps of the process that led to a decision. Intermediate quasi-doctrine was also published in the form of Command & General Staff College Student text, the most famous being Student Text (ST) 100-9, which showed the steps of the decision-making process and the interrelationship of the staff section estimates to the process, as well as briefing formats for the various briefings articulated in the overall process.

All of this developmental effort led to the most current version of FM 101-5, published in 1997. This publication reflected the Army's experience in Operation Desert Storm and multiple division and corps level Battle Command Training Program Warfighter exercises. This FM portrayed the most detailed procedural aspects of our MDMP with a complex, 38-step procedure. The FM also included more detailed examples for completing plans, orders, and annexes. The concepts of Information Management, commander's critical information requirements (CCIR), and commanders' intent were also formally introduced into doctrine.⁵

FM 101-5, our current Army doctrine on staff procedures and decision-making opens with the following statement, "Decision making is both science and art. Many aspects of military operation--movement rates, fuel consumption, weapons effects--are quantifiable and, therefore, part of the *science* of war. Other aspects--the impact of leadership, complexity of operations, and uncertainty regarding enemy intentions--belong to the *art* of war."⁶

Our Army continued to approach decision-making in a procedural, checklist way. This is understandable, as decision-making must be taught to large numbers of officers and NCOs, all of whom have different educational backgrounds. Nonetheless, all must know how to make decisions and how to approach decision-making. The checklist approach used as a memory aid and as outlined in our field manuals, is a proven approach to teaching and making decisions in the field, classroom, and staff office.

The seven steps of the current MDMP are outlined in figure 2. The 1997 version of FM 101-5 retained the detailed 38 sub-steps associated with the MDMP. This checklist approach to sequential decision-making has been promulgated throughout our Army schools and training centers. This is a time tested and proven process, the major difficulty in the application has always been the recognition that to execute the entire MDMP requires a great deal of time, and in battle or at the training centers time is a precious commodity. Nonetheless, critique after critique of battalion and brigade staffs at training centers and even division and corps staffs on Warfighter exercises continually come back to not conducting all the steps of the MDMP. One can conclude that in this instance doctrine has become dogma.

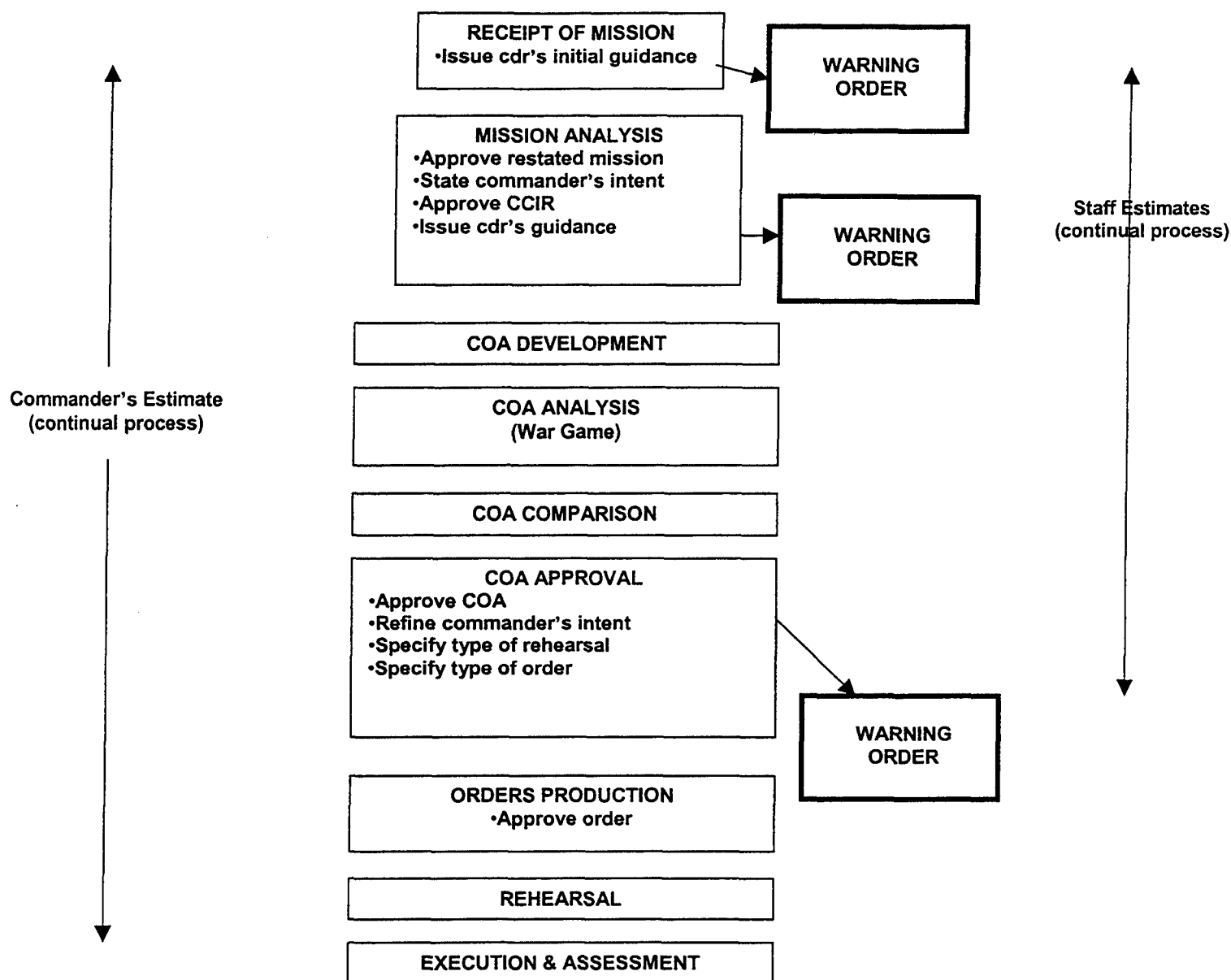


Figure 2. The current doctrinal military decision-making process

Our emerging Army decision-making doctrine is contained in draft FM 5-0, *Army Planning and Orders Production*. The FM is the sixth revision since the 1940 version of FM 101-5. FM 5-0 is still an initial draft but it continues to reinforce the sequential nature of the MDMP. The FM does mention both parallel and collaborative planning, as an approach to decision making made possible by the introduction of new Army command and control devices. The FM also opens the door to both the systematic approach to decision-making and an intuitive approach to decision making, but reserves the latter as more appropriate to command during battle.

FM 5-0 describes the growing digitization of Army forces as a means of making better plans based on a common understanding of the situation based on shared information, to the end of more rapid decision-making and execution. The growing digitization of the Army has not changed the MDMP, indeed at the opening of the MDMP chapter of FM 5-0 is the following statement, "While the digitization of our Army's information system has enhanced the speed and accuracy of planning, **the steps to the MDMP have not changed** (emphasis added)."⁷ FM 5-0 is a more focused approach to and explanation of decision makings' art and science, but it does not make the necessary step into truly capitalizing on the explosive power of shared information via the devices our Army is now fielding. In essence FM 5-0 is the old way of decision-making only faster. FM 5-0, while moving our Army closer to new methods of decision-making, closes the door to the most effective way of using parallel and collaborative methods. The FM states that parallel and collaborative planning can, "adversely affect subordinate planning and execution."⁸ Scientific studies of decision-making have illuminated other equally valid approaches to the mechanics of reaching a decision, and the processes associated with decision-making.

The Harvard Business School devotes a great deal of time on reviewing and updating methods business leaders use to make decisions. This approach has changed over time from a focus on "rational" decision making to "intuitive" decision making.

In a 1967 essay, The Effective Decision, Peter Drucker identified six sequential steps effective business leaders used in making decisions. These steps were; 1) classifying the problem, 2) defining the problem, 3) specifying the answer to the problem (defining boundary conditions), 4) deciding what is "right," rather than what is acceptable, to meet the boundary conditions, 5) building into the decision the action needed to carry it out, and finally, 6) testing the validity/effectiveness of the decision against the actual course of events.⁹ Drucker also pointed out that, "the most time-consuming step in the process is not making the decision but putting it into effect."¹⁰ The process Drucker outlines is remarkably similar to the Army doctrinal decision-making model coming into use in the 1968 version of FM 100-5.

In 1989 Professor Amitai Etzioni predicted that, "Decision making in the 1990s will be even more of an art and less of a science," and that in a world growing more complex and uncertain, "old decision-making models are failing."¹¹ Professor Etzioni hypothesized that rationalist decision making approaches were driven by a need to know with a degree of certainty that could not be met given the rapidity of the flow of

information, and the interrelated nature of the world of business. Faced with a rapid flow of information Etzioni proposed adoption of adaptive or “humble” decision making defined as, “a mixture of shallow and deep examination of data—generalized consideration of a broad range of facts and choices followed by a detailed examination of a focused subset of facts and choices.”¹² Etzioni wrote that rigid decision making could not succeed in the fast moving world and that business leaders would need to decide on a broad goal, generalized consideration, and then make smaller decisions enroute to attaining that goal as more focus on a narrower range of facts came to light.

In 2001, Alden Hayashi, senior editor at Harvard Business Review, wrote an essay called, When to Trust Your Gut. The essay describes intuitive decision-making in business leaders. Hayashi tried to identify the essential elements of intuitive decision-making in business. Based upon interviews with the top executives of a number of business Hayashi described what Clausewitz called, *coup d’oie!*. Intuitive decision-making in business relies on listening to instinct built through experience, balancing emotions, recognizing patterns and cross-checking patterns with personal experience, an knowing & checking facts.¹³ Rational models of decision-making are used where appropriate in analytical support. Hayashi states that the great power of intuitive decision-making, coupled with information sharing systems and subordinate executives in tune with the top executive’s goal is, “intuitive decision making coupled with continual feedback...honed into an effective management style for quick action.”¹⁴

Perrier Bottle

A 'textbook' example of how innovation uses 4 'organisational routes'

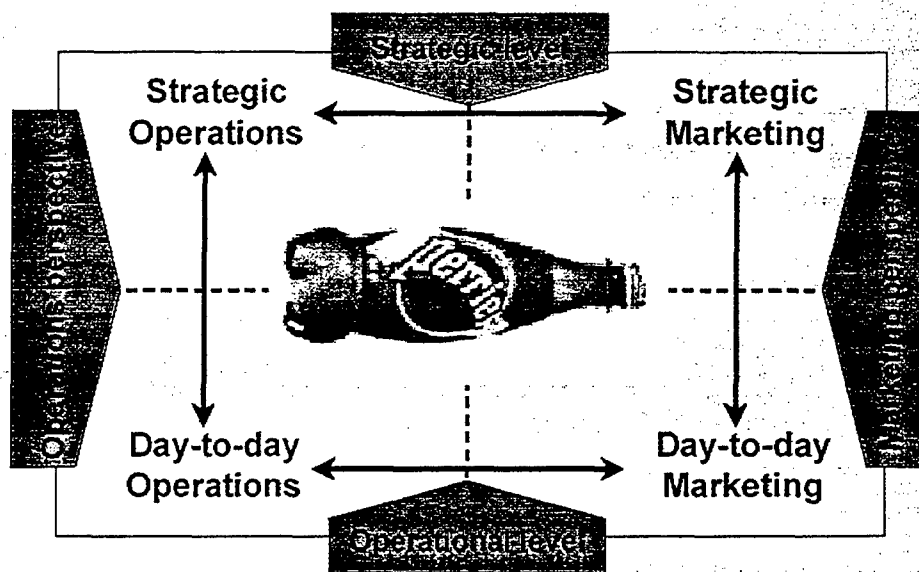


Figure 3. Nestle Product Development

Rupert Gasser, Executive Vice-President of Nestle S.A., in a presentation on Innovation at his company, described the management style of a global company that depends upon information sharing for situational understanding. Gasser described the development cycle for a product made by Nestle. The decision-making process involved a blending of regional situational awareness, due to Nestle's position in various countries around the world, local tastes and cultures, and a global situational awareness that involved understanding regional and worldwide laws and conventions. This combined situational understanding allowed Nestle to develop a new package for a well known product by balancing the input of day-to day operations in plants and marketing with the objectives set by strategic operations and marketing.¹⁵ Nestle used an Internet based system of communications to refine and sustain this global situational understanding.

Business, as shown, has moved from a 1960s sequential decision-making model to one that takes advantage of the power and speed of information sharing devices, coupled with the use of an intuitive form of decision-making that is supported where needed by a rational methodology. Scientific research into how the brain works is also

moving toward an appreciation of an executive function within the brain that guides intelligent behavior and cognitive control.

Professor Earl K. Miller of the Massachusetts Institute of Technology's Picower Center for Learning and Memory directs research toward understanding the functioning of the human brain and the decision-making process. Professor Miller's research has shown that there are automatic processes that tie sensory input from our environment to automatic or "hard-wired" responses, such as leaping out of the way of an oncoming car. His research is also close to proving that the pre-frontal cortex region of the brain functions as a kind of "executive decision-making center" that directs human responses to events that are not directly tied to the environment, but rather to achieving goals and the course of action that appears, at the moment, to be best suited to achieving the goal.¹⁶ In situations of ambiguity, Miller writes, "Ambiguity needs to be resolved by our internal states and intentions, by knowledge of possible and desired future outcomes (goals) and what means have been successful at achieving them in the past."¹⁷ Related to an expanded understanding of the situation our memory brings to the fore patterns from previous experiences that assist in the process of determining the best possible course of action that responds to an event.

Research into the functioning of the brain itself appears to be on the verge of proving conclusively that there is a human internal function of executive or neural control that operates not in a sequential process but is better described as intuitive. The brain balances memory and patterns of events that led to past success, automatic responses, and focus that allows single-mindedness of purpose to taking a decision.¹⁸ Our Army has long been aware of intuitive decision-making, from Clausewitz to the present day.

In 1992 Major Arthur Athens, USMC, wrote an especially enlightening monograph as a part of his training at the School of Advanced Military Studies at Fort Leavenworth, Kansas. The focus of his work was on exploring the art of *Coup d'oeil* or the ability of battlefield commander's to have an intuitive feel for battlefield decisions. His review of the theoretical work supporting intuitive decision-making and contrasting it to the rational decision model that is the basis for our current doctrinal process is very important.

The attractiveness of the rational model for decision-making lies in its process. The gathering of facts and assumptions, the development and comparison of a range of possible solutions to problems all imply a level of control over situations. The process is the triumph of the application of science to problems and problem solving.

Athens goes on to outline the theoretical basis for an intuitive approach to decision making, based on works from as early as the late 1930s. The essence of the theories of intuitive decision-making comes to the ability to make decisions based on an assessment of the operating environment, scan incoming information, apply experience, organize perceptions, and take a decision.¹⁹ One may call this ability intuitive, cybernetic, or muddling through, what remains is a decision making model based on an understanding of the situation allows commanders to better apply their own experience to the problem at hand, be that an immediate battlefield situation or a longer term operational/strategic problem, while accepting input from staff officers that has a bearing on the problem. In the friction laden world of war the sequential approach to taking a decision breaks down, especially in an information charged environment such as the kind in which we live at the dawn of the 21st Century.

Lieutenant Colonel Marty Stanton, in his book, Somalia on \$5.00 a Day, described his battalion S3 section's difficulty in arriving at timely orders and decisions using the current doctrine available to the field. He wrote, "The operations order for Brava was typical of how our troop-leading procedures evolved. The problem with the "traditional" deliberate planning process was that it was too lockstep and time consuming. It was not realistic for the environment we operated in. The abbreviated decision-making process as taught by the infantry school at Fort Benning was just a cut down timeline version of the deliberate decision making process. Had we followed all the steps, it still would have taken hours to produce an order."²⁰ Culled from a review of Center for Army Lessons Learned documents comes this "trend" based on observations of battalion task forces experiences at the National training Center.

TREND 18

SUBJECT: Task Force Military Decision-Making Process (MDMP)

OBSERVATION (Mech): The MDMP at task force level is not being conducted to standard.

DISCUSSION:

1. The staff has difficulty establishing and adhering to a timeline and an agenda for accomplishing this process.
2. The staff often tries to combine course of action (COA) development and wargaming, resulting in a lack of focus and a plan that is not synchronized.

TECHNIQUES AND PROCEDURES:

1. Refer to **FM 71-2** for the steps and procedures for accomplishing this process.
2. The task force XO or S3 must not only establish a timeline that allows subordinates to plan and establish priorities of work, but they must also *adhere* to the planning timeline to ensure the complete process is accomplished in the time allotted.
3. Refer to **CALL Newsletter No. 95-12 Update, Military Decision Making: "Abbreviated Planning,"** May 97.²¹

On 4 April 2001, Colonel Steve Bailey, the commander of our Army's first Interim Brigade Combat Team (IBCT) said, "No one has established a doctrinal approach to executing the MDMP digitally. I checked with brigade commanders in the 4th ID and everyone is different." At the same conference a colonel from the Battle Command Training Program (BCTP) stated in response: "The seven steps of the MDMP are the seven steps, period."²²

Interim Force Organizational & Operational Concept

The Interim Force has a twofold purpose within the scope of Army Transformation. The Interim Force is designed to meet a near term strategic need for forces that mix the capabilities of the Army's heavy and light force and thus be more rapidly responsive to regional commanders-in chief requirements. The second, and equally important, purpose is to serve as the Army's bridge to the end state Objective Force by developing and refining doctrine, tactics, techniques, and procedures, and approaches to training, in short a catalyst to transform both the operational and institutional Army. The initial doctrinal base for the Interim Force, the Operational & Organizational Concept, was written with this latter purpose in mind. Doctrinal manuals for the Interim Force, ranging from the Brigade manual to the Reconnaissance platoon manual, use the O&O as the start point

The Operational & Organizational Concept, O&O, was written between November 1999 and April 2000. The O&O clearly explores the strategic reasons for the Interim Force and lays the groundwork for the development of the supporting doctrine for the Initial Brigade Combat Team, IBCT, as the leading edge of Transformation.

Central to the operational use of the IBCTs is the move from a staff driven, sequential approach to decision-making to a commander and execution-centric mode of operating and taking decisions. The widespread distribution of the full range of Army Battle Command System (ABCS) devices will allow commander and staff interaction from any where the commander is on the battle field or in the operating area.

Commander and execution-centric operations and planning require an MDMP process that is, "more responsive to the needs of the commander, compared to past practices...permit(ing) the commander to spend less time and energy understanding the

present and more time directing current operations and planning for the future.”²³ In support of this goal the O&O also cites the requirement for a commander and staff to participate in “Collaborative planning (multi-echelon, parallel, simultaneous).” This parallel and collaborative planning is supported by “a common operational picture maintained by means of continuous, focused information sharing.”²⁴

The O&O describes a manner of planning, called distributed. The power the ABCS devices give to the IBCT in the form of assured communication and information links allows commanders and staff to participate in operations planning without the requirement of collocating. A digitally enhanced unit can exchange ideas and discuss options for action, based on the shared common operational picture the ABCS affords the units.²⁵ The collaborative nature of planning and operating is also based upon the shared common operational picture. The rapid, assured exchange of information allows an acceleration of the MDMP as courses of action, COAs, that are more in tune with the current situation can be developed and refined in a shorter period of time. The horizontal understanding of the plan, that is within the executing unit, as well as the vertical understanding of the plan among higher headquarters directing the action is enhanced as well. The IBCT, as the first units of action within the Interim Force, have the potential to achieve greater speed of execution of operations that are based on informed intuition and judgement of commanders. IBCT Commanders can move on the battlefield or within the area of operations and carry the COP with them thus “seeing” the entirety of the battlefield while having the ability to move to the decisive point of the battle. The O&O sets the groundwork for these types of non-linear operations and the supporting doctrine.

Digitization is not limited to the Interim Force. The Army’s Legacy Force of armored and mechanized divisions and regiments are also receiving the complete range of ABCS devices, and facing the same lack of doctrinal support that guides operations based on information sharing and the common operational picture. Effective doctrine cannot be dogma. The current MDMP has taken on dogmatic authority. Digitization will allow a focus on product and action rather than on process, if we can develop the supporting doctrinal manuals and teach a new approach to taking decisions that capitalize on this power. A new doctrinal approach to decision-making is the essential first step. The MDMP must not be the end, it is the means to an end, which is effective, and executable plans that produce victory. Major Timothy Lupfer, writing of changing doctrine in World War One wrote, “An army that adopts tactical doctrine that it cannot

apply will multiply its misfortunes.”²⁶ Our Army is fielding new equipment without changing doctrine, and causing problems in execution of operations. In the following section the current MDMP model and the proposed model will be examined.

Comparison of Current and Proposed Decision-Making Process

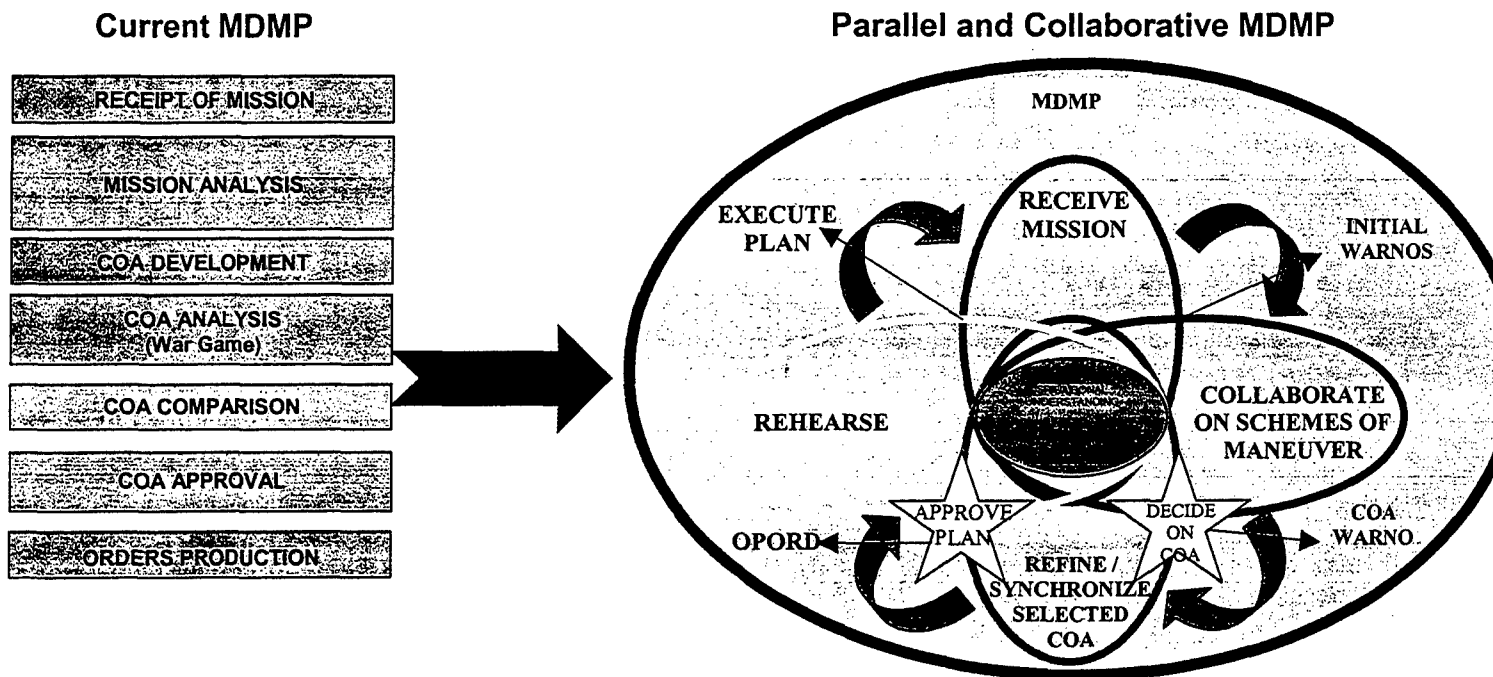


Figure 4. Comparison of Models

The two models differ greatly in the approach to reaching and taking a decision. The current model from FM 5-0, as stated earlier, remains the same. The model reinforces the approach to decision-making that is planning centric and hierarchical. The proposed model enabled by the range of digital devices currently being fielded in the Army promotes the mind set toward execution centric action supported by parallel and collaborative methods. Situational understanding, supported technically by the ability to share a common operational picture, allows the commander to make a near continuous assessment of the operations cycle. The network of communications allows involvement of subordinate commanders and staffs through virtual collaboration. Finally the model

allows for a streamlining of the entire decision-making process while optimizing the time spent on planning. The proposed model is not the old way faster, it is a new way of taking decisions that enhances rapidity of execution.

The proposed model begins with the development and refinement of Situational Understanding. Updating and ensuring situational understanding is a continuous process that provides the "environment" for all other actions within the decision-making process. The totality of the friendly situation as well as the enemy situation is considered in the process. The intelligence preparation of the battlefield retains its importance, as the model is applicable across the spectrum of conflict. The requirement for situational understanding reinforces what Sun Tzu said thousands of years ago, "Know the enemy and know yourself; in a hundred battles you will never be in peril."²⁷ Situational understanding is based upon knowledge, in real time, of the enemy situation and the friendly situation. The power of the data bases within reach of the commanders and staffs will also allow for an appreciation of the factors of geography (terrain analysis), weather effects, regional economy, political structure, in essence the true environment of the operational area.

Staff officers can update estimates on a shared network, as well as use the power of the net to reach back to sanctuary locations or into US based databases for further analysis and support. Based upon this total situational understanding the commander's intent for an operation, his critical information requirements, and essential elements of friendly information can be more focused and more widely understood. This wide understanding is fostered through the collaborative nature of a shared common operational picture.

The information network within the command enables a common operational picture that is shared and once established allows a clarity of purpose regarding operations that are ongoing, future operations, and future plans. It allows visualization of the battlefield writ large throughout the command. Receipt of mission is a shared step or action in either process.

The analog MDMP begins with the receipt of the mission. Multiple sequential steps flow from this first step. Upon receipt of a new mission the staff begins to analyze the mission. Stated, implied, and essential tasks are derived from analysis, staff agencies aggressively move out to update or write new staff peculiar estimates of the situation; the entire process is directed by the Chief of Staff. A key time allocation

decision must be made as the higher headquarters strives to allocate two thirds of available time to subordinate headquarters planning efforts. The last step in the process at this point is a restated mission briefing to the commander that results in a warning order to the command.

Digital MDMP can begin with the receipt of a mission from higher headquarters, or by a lower headquarters anticipating a new mission based on situational understanding and the guidance of commander's intent. Commanders and staff receive and post the most recent friendly and enemy information in continuous refinement of the common operational picture. The commander need not be in the same location as the staff to begin this process given the power of the information technology in the digital units. Subordinate commanders and staffs have virtually the same amount of time for planning, based on the shared common operational picture and situational understanding. The analysis of a mission and the subsequent planning are conducted in true parallel fashion. The mission statement of the higher headquarters is posted on the net, which is basically a warning order whose purpose is to ensure understanding of the mission and promulgates commander's guidance for action. Parallel and collaborative planning continues among the headquarters on the net.

A common operational picture and shared databases across the network in digital units make anticipating and analyzing a mission much easier for commanders and staffs. Collaboration streamlines the planning effort and optimizes execution time lines. The next step in analog MDMP is Course of Action Development. The next action in the digital MDMP is Collaborate on Schemes of Maneuver.

Receive Mission

Legacy

- Decision-making process begins with the receipt or anticipation of a new mission
- Upon receipt of mission, staff officers must be aggressive in obtaining information for their staff estimates
- Commander allocates a minimum of two-thirds available time for subordinates
- Final step is a WARNO that facilitates parallel planning



Interim

- Anticipation of a mission stems from good situational understanding
- Commanders and staff receive and post the most recent data to update the common operational picture
- Subordinate commanders have virtually the same planning time as higher
- Common operational picture and shared data bases facilitate parallel planning

A common operational picture and shared data bases across the network make anticipating the mission much easier for commanders and staff. Collaboration streamlines planning and optimizes execution time lines.

Figure 5. Legacy – Digital Receive Mission Comparison

Collaborate on Schemes of Maneuver Versus COA Development

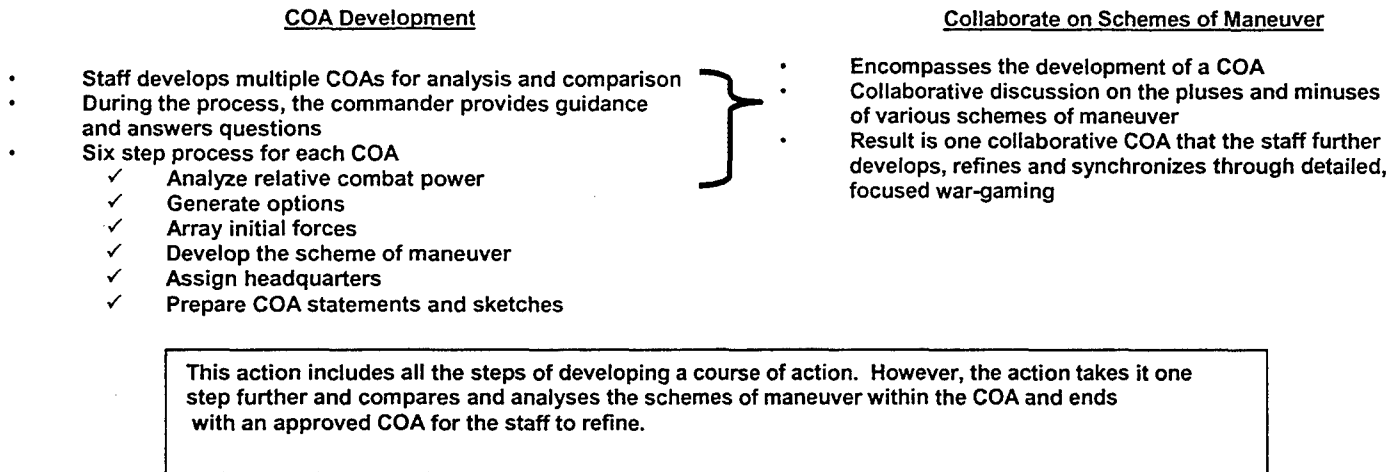


Figure 6. COA – Scheme of Maneuver Comparison

After issuance of the restated mission warning order an analog unit begins the step of course of action development. Courses of action are designed to best accomplish the essential tasks of the unit mission in significantly different ways, allowing for comparison and analysis. There are six steps associated with the development of each separate course of action. Directed by the Chief of Staff the staff analyzes relative combat power of enemy and friendly units and generates options for employment of forces. The friendly forces are arrayed against potential enemy formations and then possible schemes of maneuver are developed. Controlling subordinate headquarters are assigned to the array of friendly units as outlined in each scheme of maneuver. Once this is done course of action sketches and statements are drawn and all courses of action are presented to the commander for his/her approval. This approval is not a decision on one course of action, rather the approval for the staff to continue analysis that will lead to a recommended course of action.

Digital unit MDMP action, Collaborate on Schemes of Maneuver, encompasses all the middle three steps of the analog MDMP. The shared databases and digital devices allow a commander and staff to concentrate on a scheme of maneuver that best accomplishes the mission at hand. The pluses and minuses of schemes of maneuver can be discussed collaboratively over the network. Sketches can be drawn using whiteboard technologies that outline schemes of maneuver for everyone on the network to see. The discrete steps of analog MDMP are not dismissed in this action; indeed all

are considered but in a parallel and collaborative environment based on the common operational picture and enhanced by the information sharing network established in digital units. Schemes of maneuver can be discussed in the harsh light of actual friendly unit status and known enemy locations and practices. Schemes of maneuver will come up, be briefly discussed and discarded from consideration, based on factual data and the experience of the participants. The focus of the effort, enabled by the collaborative nature of the action and through the medium of the information sharing devices in a digital unit, is to come to a broad understanding of the best way of accomplishing the mission at hand. The end result of this action is one agreed upon and understood scheme of maneuver that becomes the accepted course of action for the entire unit. The accepted course of action, developed with the commander, is posted on the net for all units to view and from which to refine subordinate unit supporting actions and plans.

Analog units move from approved courses of action to course of action analysis and comparison. Digital units, having an approved course of action move directly into course of action refinement.

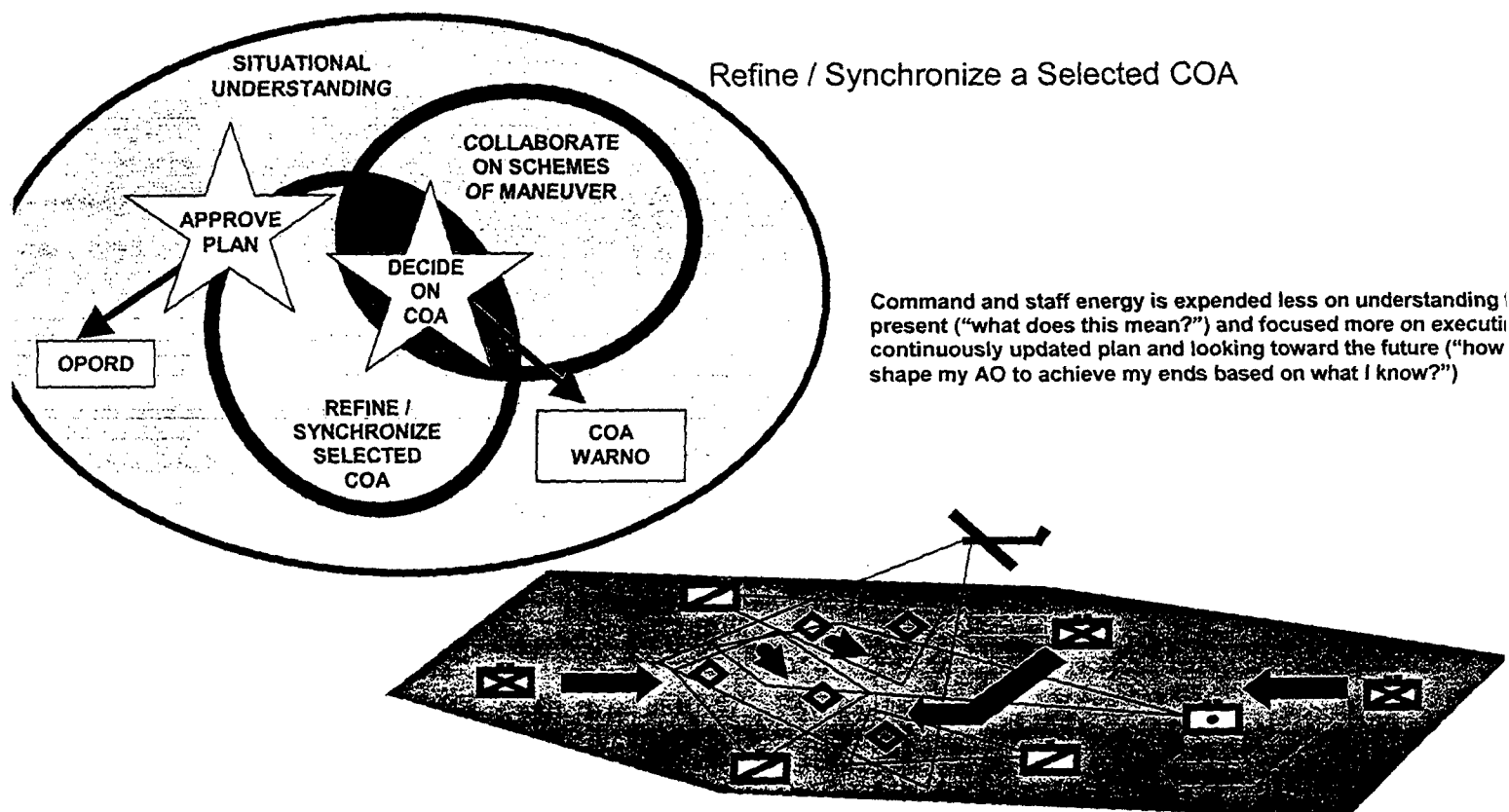


Figure 7. Refine-Synchronize the Selected COA

The next two steps within the analog MDMP are COA analysis and COA comparison. Our doctrine for this analysis and comparison requires the war-gaming of every approved course of action against every feasible enemy course of action; usually the most likely and most dangerous enemy courses of action are used. The commander or the Chief of Staff selects a method of war gaming and timelines are drawn up for controlling the war-gaming efforts. This disciplined process, with all of its steps and rules, attempts to visualize the flow of the battle as it unfolds. The results of the war gaming are captured on a synchronization matrix or in the form of "pluses and minuses" of the proposed course of action in accomplishing the mission. Each course of action is then compared to a set of criteria, usually established in advance in accord with unit planning standard operating procedures. The end result of the analysis and comparison is a coordinated staff recommendation to the commander on the best course of action for mission accomplishment. This is a time consuming process. In deliberate planning the process can take days depending on the level of detailed required by the commander. In crisis action planning or abbreviated planning periods the commander or the Chief of Staff may direct a course of action or limit the scope of the analysis as required.

The digital unit, having already selected a scheme of maneuver, moves into the action of Refine/Synchronize the Selected course of action. This is no less as disciplined a process as the current MDMP. The refinement and synchronization process is conducted in a parallel and collaborative manner. The power of the information devices available to the digital unit allows several advantages in analysis. If there is time the unit can "reach" back to sanctuary bases or to CONUS for more depth in war-gaming, for example a unit could call on the Training and Doctrine Command's Analysis Center at Fort Leavenworth for attrition model based results of war-gaming. If there is no time for that level of detailed refinement, the units on the network can refine actions and subordinate unit responses to the enemy course of action. The ABCS devices being fielded will soon have war-gaming tools as a part of internal software. The end result of the combination of reach supported or local refinement of the course of action is a widely understood and synchronized plan for commander review and approval.

Commander's Approval

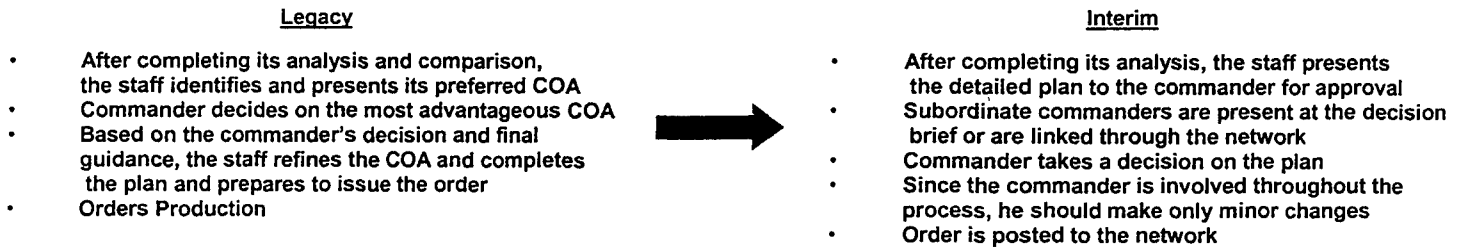


Figure 8. Legacy – Digital Commander's Approval Comparison

Collaborative decision making streamlines the approval process and allows subordinates to have more participation in the development of the final decision.

The final step in the analog decision making process, prior to execution, is attaining the commander's approval of the recommended course of action and upon receiving his final guidance, turning that approved COA into the final operations plan or order. After completing all of the preceding steps of the analog MDM the staff identifies the most advantageous COA and presents the results of the analysis to the unit commander. The commander receives this briefing and makes a decision to accept the staff recommendation, reject it, or refine the recommended COA with further guidance. This is in accord with the hoary military axiom that likely dates back to the Roman Legion, "When a commander is presented three courses of action for decision, inevitably he will select course of action four." In deliberate, unconstrained planning the staff should return to the war-gaming phase of the process to refine the synchronization matrix and supporting decision criteria that was developed during the first war game, based on new information and the commander's final guidance, in a time constrained environment this sub-step is not done. Nonetheless, based upon the commander's final decision and guidance the staff refines the selected COA into the concept of the operation, completes the plan/order, and prepares to issue the order to the subordinate unit commanders. Orders production takes place and the completed plan is delivered to subordinate units.

The digital staff having an approved scheme of maneuver that was developed in a parallel and collaborative mode within the unit moves into refinement of the scheme of maneuver into the course of action that is presented to the commander. Subordinate commanders are present at this briefing either in person or through the links within the network. The commander takes the final decision on the plan and since the commander and his subordinate unit commanders were involved in the entirety of the process via the net, no major guidance changes should be necessary. The power of the C4ISR devices

in place in a digital unit enables the commander to participate in the process without having to physically be at the tactical operations center. The commanders are on the net as they move on the battlefield or visit units. If new information was uncovered during the process or came to light at any time, changes can be made with everyone involved understanding the implications. Orders production is done via posting the order on the net and alerting subordinate units to its presence there. Supporting estimates are continuously updated on the net as a part of the on-going refinement of situational understanding.

Digital devices do not eliminate Clausewitzian fog and friction. The nature of war is still within the realm of human emotion and endeavor. The digital information and communication devices being fielded now afford the Army an opportunity to dominate the battlefield through a blend of sensor and human activity. Decision-making must start, especially in an information-oriented world, with situational understanding. The time to include a digitally enabled MDMP into our Army doctrine is now.

Conclusion

Our Army has a long history of developing a method to reach decisions. From sketched maps updated by cavalry trooper reports to printed maps overlaid with acetate, from telegraph and runners to radio and video-teleconference the means of receiving information have changed over time and throughout the wars our Army has faced. As shown, the methodology for reaching a decision has grown in complexity and in structure. Our current doctrinal manuals, both those in being and in draft, were never meant to become dogmatic in execution, but have nonetheless become so in practice. Sequential decision-making is a part of our actual tactical practice, and causes frustration as units cope with both a sequential doctrine and a growing number of digital information devices that provide a degree of certainty in information as they merge sensor and human reports.

The conduct of war is changing. The means of war are evolving, especially in the access to information available to battlefield commanders, and those commanders and staff not present on the battlefield. We are nearing the time when commanders will no longer huddle around the hood of a Jeep and stare at a map. These commanders and staff will more likely huddle in the green glow of a computer screen and try to divine the intentions of the enemy from "real time" intelligence gleaned from the array of sensors supporting the on-going and future operation. While the conduct of war is changing, the nature of war, the realm of chance, emotion, and the human heart is not changing.

Professor Williamson Murray, in a cautionary essay published in 1997, titled, "Clausewitz Out, Computer In," cautions against a tendency toward hubris based on technological superiority. He writes, "The danger in the belief that technology will offer us total battlespace...dominance in the next century does not lie in the technology itself...What is dangerous about the new technocratic view is...it is wholly disconnected from what others think, want, and can do."²⁸ Murray takes a dim view of the growing Revolution in Military Affairs and how the role of humans in battle and decision-making appears to be diminished in light of a growing dependence on the deterministic qualities of computers and data. He argues that what is needed for battlefield dominance in the 21st Century is, "a deeper understanding of the political context of war and the very different set of assumptions that our opponents bring to it."²⁹ Clausewitz, a non-linear

thinker, is not without relevance in the 21st Century, as the amount of battlefield information available will add to the "fog of war."

Retired Marine Lieutenant General Paul K. Van Riper in an essay titled, "Pursuing the Real Revolution in Military Affairs: Exploiting Knowledge-Based Warfare," argues that the revolution in military affairs (selection of case deliberate) is in how we use the advanced technological devices to change how we take decisions in battle and before. He writes that information technology is key to how American forces will fight and prepare to fight, "all the information in the world is useless unless it contributes to effective decision making in battle."³⁰ Van Riper argues that cognitive decision making, akin to Hayashi's intuitive decision making in business cited earlier in the monograph, is the form of decision making used in 90% of case studies done in the past 20 years in the science of decision making.³¹ The heart of cognitive or intuitive decision-making is the recognition of patterns or similar situations that the decision maker has either faced before or studied. The use of technology to display a common operational picture can enhance the display of information to commanders and staffs, and enable pattern recognition. Van Riper believes that, "Technology has not overcome the chance, ambiguity, and violence extant in war..."³² Technology can assist commanders though in taking better decisions as sensors and human senses and intuition blend.

How do we take decisions in this changing age of information access? The purpose of this monograph was to explore how we came to have our current Military Decision Making Process, MDMP, and then to establish a case for updating the model all Army officers are familiar with to one more suited to the information age and the increasing digital nature of our units. The "legacy" force of our Army is "digitizing." The emerging interim force of the US Army has a huge range of digital information devices. The "on the horizon" objective force of the future will base operations on the tactics, techniques, and procedures developed and refined by both the Interim Force and the rapidly digitizing Legacy Force. Operations will be executed based on shared information and a common operating picture developed through sensor and human input.

The planning and execution challenge is well described in the following passage drawn a Center for Army Lessons Learned Newsletter.

The deliberate approach to the MDMP is a proven process. The process works well, but requires significant amounts of time to develop, analyze, and compare multiple friendly and enemy COAs. The modern day battlefield does not always provide us the

luxury of having ample time to complete such a process. Fast-paced operations require an accurate and detailed situational awareness about the terrain, the enemy, and ourselves. This level of a detailed situational awareness requires time to develop -- time we do not always have. On one hand, we need to issue orders and instructions immediately to facilitate ample troop-leading time for subordinates. On the other hand, we do not have the desired level of situational awareness to issue detailed, integrated, and synchronized orders and instructions. We generally do not acquire this level of situational awareness until later in the planning process. This is an extremely complex problem that requires us to implement the MDMP using different techniques and procedures to facilitate incorporating the necessary changes to the original plan.³³

The problem of not having, "the desired level of situational awareness" to issue orders is overcome in digital units. In the proposed updated decision-making model Situational Understanding is the start point for all planning, and a shared common operational picture that supported by an information network of Army Battle Command Systems devices supports that start point. How we develop and use this situational understanding is a matter of doctrine, as doctrine must be the engine of change in our Army.

The nature of our doctrine, especially given the interrelated actions required in what our operational and organizational concept for the use of the Interim Brigade Combat Teams calls for demands that the effort at revising the MDMP include all the schools and centers within our Army. The purpose of the Interim Force is to begin the process of Transformation in the operational Army and the institutional Army.

The capabilities of the situational awareness devices our Army is fielding; from the Force 21 Battle Command Brigade and Below, (FBCB2) to the range of Army Battle Command Systems (ABCS) is astounding. We are truly on the brink of realizing the fundamental desire of soldiers since the beginning of organized warfare; we will know precisely where we are, where the enemy is, and where the rest of our force is right now. This refinement of thought and expansion of a common picture allows a higher level commander to see his particular battle unfold, see his particular decisive points emerge, and allow the proper reinforcement of the main effort through the presence of the commander at the proper decisive point.

Secretary of Defense Rumsfeld charged all soldiers, sailors, Marines and airmen to transform. In a speech at the National Defense University he said, "We need to change not only the capabilities at our disposal, but also how we think about war. All the high-tech weapons in the world will not transform U.S. armed forces unless we also transform the way we think, the way we train, the way we exercise and the way we fight."³¹

Despite the size of the proposed FY 03 defense budget our Army will not completely digitize in the near future. The 4th Infantry Division has two brigades equipped with a range of digital devices. The 1st Cavalry Division is scheduled to be fielding these devices in FY 03. III US Corps is conducting digital Warfighter exercises as its Corps level tactical operations center receives the full range of C4ISR devices. The first Interim Brigade Combat Team will reach initial operational capability in December of 2002 with the remaining seven IBCTs being fielded between 2003 and 2007. The Third US Army/Army Component Central Command, currently forward deployed in Camp Doha, Kuwait, is conducting "reach" operations between Kuwait and Fort McPherson in Georgia focused mainly on the development and refinement of time phased force deployment lists (TPFDL). Nonetheless, digital units are entering the force now, and without doctrinal guidance for their operations and training. The time to include a digitally enabled MDMP into our Army doctrine is now.

Our Army cannot afford to have multiple decision-making methods promulgated in doctrine will be one cry against this conclusion. We have multiple methods of MDMP right now, ranging from the full MDMP to the abbreviated MDMP, to the proposal in the draft FM 5-0 for methodical MDMP (the current form) and intuitive decision-making that is more conducive to battle command. Decision making for planning should be the same as decision making in contact. That is, the process should be habit and useful in either time unconstrained or time constrained settings. Any doctrinal method that is enamored with itself loses its adaptability and becomes an inflexible instrument of defeat against a capable enemy. As Professor Barry Posen pointed out in his book, The Sources of Military Doctrine, "Stagnant doctrines may lead to disintegration. They may also simply lead to defeat on the battlefield."³²

The proposed digital MDMP can be applied at all levels of war, tactical, operational, and strategic. Our echelons of command from company team to field Army are digitizing. The need for doctrine is great, right now. The common operational picture may look the same at all levels, but the use of the common operational pictures differs with the level of command and the scope of the operations. Introduction of the nuances of regional politics, US and other nations economies, national and theater security strategic guidance all play a role in the development of the situational understanding appropriate to the level of command. The fact is that the devices will exist at all of these levels, how we use them to take sound decisions at a more rapid pace requires new doctrine.³³

It would be an incorrect conclusion that our Army should abandon the current MDMP when the number of non-digital units is so high. The conclusion that can be drawn from the pace of the fielding of technology is the time is now to include the digital MDMP into doctrine, as an annex for digital units. The process will then be taught in our centers and schools paving the way for the time in the future when the predominance of our Army is digitally enabled and enhanced. As the number of digitally equipped units grows the annex on a digital MDMP can become the chapter on decision-making and the analog chapter can be relegated to an annex and ultimately to history. The time to include a digitally enabled MDMP into our Army doctrine is now.

END NOTES

¹ Taken from the US Army web site www.army.mil. These statements on Transformation are a part of the larger Army Vision.

² Reach operations are defined as operations using digital systems to augment planning/execution by expanding the range of collaborators in the process. Examples include agencies such as TRADOC Analysis Command or Concepts Analysis Agency for an attrition-based war game and results from computer assisted analysis. Reach operations also encompass combat service support actions, for example the ability to locate required supplies in continental US depots and arrange for their shipment to the theater of operations.

³ For this section I drew heavily on the work I did with LTC Brian Stapleton and MAJ Bruce Antonia while we were assigned to the Brigade Coordination Cell at Fort Lewis, Washington from June 2000-2001. The three of us were charged with revising the Army's MDMP. Our work was never published.

⁴ Christopher R. Paparone, US Army Decisionmaking: Past, Present, and Future, Military Review, No. 4, 2001, pp. 45-53. Hereafter cited as Paparone.

⁵ For this section of the monograph I drew heavily from COL Chris Paparone's Military Review essay cited above, as well as his initial draft essay that he graciously provided me, which was the basis of the MR essay. I also reviewed several of the cited Field Service Regulations and Field Manuals.

⁶ FM 101-5 Staff Organization and Operations, Headquarters, Department of the Army, 31 May 1997, p. 5-1. Hereafter referred to as FM 101-5.

⁷ FM 5-0 Army Planning and Orders Production, Initial Draft, Headquarters, Department of the Army, 1 August 2001, p. 4-1. Hereafter cited as FM 5-0.

⁸ FM 5-0, p. 1-17.

⁹ Peter F. Drucker, "The Effective Decision," in Harvard Business Review on Decision Making, Boston, MA: Harvard Business School Publishing, 2001, pp. 2-3. Hereafter cited as Drucker, HBR.

¹⁰ Drucker, HBR, p. 2.

¹¹ Amitai Etzioni, "Humble Decision Making," in Harvard Business Review on Decision Making, Boston, MA: Harvard Business School Publishing, 2001, p. 46. Hereafter cited as Etzioni, HBR.

¹² Etzioni, HBR, p. 52.

¹³ Alden M. Hayashi, "When to Trust Your Gut," in Harvard Business Review on Decision Making, Boston, MA: Harvard Business School Publishing, 2001, p. 173-185. Hereafter cited as Hayashi, HBR.

¹⁴ Hayashi, HBR, p. 186.

¹⁵ Based on personal notes taken during the Gasser presentation at MIT's Sloan Business School, on 11 February 2002. Figure 3 was taken from a slide in Mr. Gasser's presentation and used with permission of the Sloan School at MIT.

¹⁶ Earl K. Miller and Jonathan D. Wallis, Volition and the Prefrontal Cortex. In: The Visual Neurosciences, Chalupa, L.M. & Werner, J.S., eds. Cambridge, MA: MIT Press, not yet in print,

p. 4, hereafter cited as Miller, and personal e-mail from Professor Miller to the author, shown in full. From: "Earl Miller"

To: Kevin Benson, Subject: models

Date: Fri, 29 Mar 2002 08:48:36 -0500

Importance: Normal

Hi Kevin,

Correct me if I am wrong, but it seems to me that the major difference between the standard military model and your model is in how much information the top executive has access to. In the standard model, the executive only interacts with the modules one or two steps below it. In your model, the executive gets summaries from all the other modules and has therefore has the "big picture". Technology has made your model now possible.

The architecture of your model is much more like the brain. The brain's "executive" areas such as the prefrontal cortex likewise have access to highly processed information from all the lower-level functions that analysis what we see, how we feel, stored memories, potential actions, etc. and it issues commands to all the lower-level modules that coordinate them toward goals. This architecture makes more sense because it allows for more rapid, flexible behaviors than a sequential model ever could; in a sequential model each processing step takes time and with each step there is an opportunity for errors to creep in.

Interesting stuff, Colonel.

Earl

Earl K. Miller, Ph.D.

Professor of Neuroscience

Associate Director, MIT's Picower Center for Learning and Memory

¹⁷ Miller, p. 4.

¹⁸ I am indebted to Professor Earl Miller for his review of this monograph, his electronic mail, and his time in explaining the function of the brain.

¹⁹ The "Intuitive Decision Making" section of the Athens monograph begins with a review of the rational decision making model and why its use is so widespread. The conclusion drawn is that scientists and others are drawn to the rational model because it is just that, very rational and well laid out, in effect, a standard process that can be applied and easily taught to people and groups that need a common base of reference for decision making. Athens also has an extensive review of the basis for an alternate paradigm for decision-making, the intuitive model. He reviews works from Chester Barnard, The Functions of the Executive, published in 1938, to Harvard Business Review essays by James L. McKenney & Peter G.W. Keen in 1974, and Henry Mintzberg in 1975. Athens conclusion drawn from this document review is that the rational decision model is not reflective of the process used by decision makers in the "real world" especially when under the pressure of time constraints. Athens monograph was approved for public release and is available through the US Army Command & General Staff College library.

²⁰ Marty Stanton, Somalia on \$5.00 a Day, Novato, CA: Presidio Press, 2001, pp189-190. Hereafter cited as Stanton.

²¹ NTC TRENDS AND TTPs, 3rd & 4th Qtrs, FY98, NO. 99-10. This particular publication had 70 NTC Trends under the needs improvement column for command and control, all of which referred to units not conducting detailed enough MDMP, IAW the checklists provided by doctrinal manuals. Taken from a search for references to MDMP at the Center for Army Lessons Learned web site, <http://call.army.mil/call.html>. The search yielded numerous NTC/JRTC/CMTC Trend Analyses on the application of the MDMP. Further reading of the trends indicate that the application of the process, or rather the failure to execute the complete process is frequently cited as the reason for unit failure on missions at any of the CTCs. Hereafter cited by CTC title, quarter and FY.

²² Drawn from the author's personal notes taken during an initial Warfighter Exercise conference held at Fort Lewis, Washington on 4 April 2001. At the time the author was the Chief of Staff,

Interim Brigade Coordination Cell, a TRADOC agency charged with coordinating all aspects of transforming COL Bailey's brigade from a tank heavy conventional brigade to an IBCT.

²³ The Interim Brigade Combat Team Organizational and Operational Concept, version 4.0, US Army Training and Doctrine Command, Fort Monroe, VA. 18 April 2000, Executive Summary, p. 12. Hereafter cited as O&O.

²⁴ O&O, chapter 4, pp. 3, 7.

²⁵ O&O, chapter 4, section 1, p. 4

²⁶ Timothy T. Lupfer, Leavenworth Papers No. 4, The Dynamics of Doctrine: The Changes in German Tactical Doctrine During the First World War. Fort Leavenworth, KS: US Army Command and General Staff College, July 1981, p. 56.

²⁷ Sun Tzu, The Art of War, trans. By Samuel B. Griffith. New York: Oxford University Press, 1982, p. 84. Hereafter cited as Sun Tzu.

²⁸ Williamson Murray, "Clausewitz Out, Computer In," in National Interest, number 48, Summer 1997, p. 63. Hereafter cited as Murray.

²⁹ Murray, p. 63

³⁰ Paul K. Van Riper and F.G. Hoffman, "Pursuing the Real Revolution in Military Affairs: Exploiting Knowledge-Based Warfare," in National Securities Quarterly, Summer 1998, Vol. IV, Issue 3, p. 7. Hereafter cited as Van Riper.

³¹ Van Riper, pp. 8-9.

³² Van Riper, p. 16.

³³ CALL NEWSLETTER NO. 95-12 Military Decision Making "Abbreviated Planning." May 97 (Update) NTC TRENDS AND TTPs 1st & 2nd Qtrs, FY99 NO. 01-8

³¹ Donald Rumsfeld, REMARKS BY U.S. SECRETARY OF DEFENSE DONALD RUMSFELD TO THE NATIONAL DEFENSE UNIVERSITY TOPIC: DEFENSE TRANSFORMATION. Fort McNair, Washington, D.C. Thursday, January 31, 2002

³² Barry R. Posen, The Sources of Military Doctrine. Ithaca, NY: Cornell University Press, 1984, p. 221.

³³ I built this paragraph in response to an electronic note I received from COL (ret) Bill Rice, a contractor at Third US Army/ARCENT headquarters. COL (ret) Rice is a SAMS graduate and served as the G3 Plans of Third US Army on his final tour of duty. I am indebted to him for his thoughtful review of this monograph.

BIBLIOGRAPHY

Books

- Baddeley, Alan. Human Memory. Needham, MA: Allyn and Bacon, 1990.
- Clausewitz, Carl. On War. Ed. Michael Howard and Peter Paret. Princeton, NJ: Princeton University Press, 1976.
- Echevarria, Antulio J. RAPID DECISIVE OPERATIONS: An Assumptions-based Critique. Carlisle, PA: Strategic Studies Institute, 2001.
- Gartner, Scott S. Strategic Assessment in War. New Haven, CT: Yale University Press, 1997.
- Harvard Business Review. Harvard Business Review on Decision Making. Boston, MA: Harvard Business School Press, 2001.
- Lupfer, Timothy T. Leavenworth Papers No. 4, The Dynamics of Doctrine: The Changes in German Tactical Doctrine During the First World War. Fort Leavenworth, KS: US Army Command and General Staff College, July 1981.
- Miller, E.K. and J.D. Wallis. "Volition and the Prefrontal Cortex," in The Visual Neurosciences, Chalupa, L.M. & Werner, J.S. eds. Cambridge, MA: The MIT Press, not yet released.
- Posen, Barry R. The Sources of Military Doctrine. Ithaca, NY: Cornell University Press, 1984.
- Rosen, Stephen P. Winning the Next War. Ithaca, NY: Cornell University Press, 1991.
- Sorley, Lewis. A Better War. New York: Harcourt, Inc., 1999.
- Stanton, Martin. SOMALIA on \$5.00 a Day, A Soldier's Story. Novato, CA: Presidio Press, Inc., 2000.
- Sun Tzu. The Art of War. Trans. Samuel B. Griffith. New York: Oxford University Press, 1963.
- Toffler, Alvin and Heidi. War and Anti-War: Survival at the Dawn of the 21st Century. New York: Little Brown, 1993.

Field Manuals

- FM 3-0, Operations, Headquarters, Department of the Army, 14 June 2001. (formerly known as FM 100-5)

FM 5-0, Army Planning and Orders Production, Initial Draft, Headquarters, Department of the Army, 1 August 2001. (formerly known as FM 101-5)

FM 100-5, Operations, Headquarters, Department of the Army, 14 June 1993.

FM 101-5, Staff Organization and Operations, Headquarters, Department of the Army, 31 May 1997.

The Interim Brigade Combat Team Organizational and Operational Concept, version 4.0, US Army Training and Doctrine Command, Fort Monroe, VA. 18 April 2000.

Electronic Mail Received by the Author

December 14, 1997 15:23, excerpts from a Summer 1997 article in the National Interest entitled "Clausewitz Out, Computers In," from then Major (now LTC) H.R. McMaster

October 16, 2001 16:31:08 From: Stapleton Brian P LTC Subject: 4ID WFX

October 24, 2001. Personal note from COL Chris Paparone, Army War College, on his research into decision-making and the search for a new model.

6 March 2002, 09:33:21, Personal note from COL (ret) Bill Rice, Third US Army/ARCENT, Subject: Monograph Review.

29 March 2002, 08:48:36, Personal note from Professor Earl Miller, MIT, Subject: Models within Monograph.

Essays and Articles

Adams, Thomas K. "Future Warfare and the Decline of Human Decisionmaking."

Published in Parameters, vol. XXXI, No. 4, Winter 2001-02. pages 57-71.

Athens, Arthur J. Unravelling the Mystery of Battlefield Coup d'oeil. Unpublished monograph from the US Army Command and General Staff College School of Advanced Military Studies, Fort Leavenworth, KS. 1992.

Barry, John. "A New Breed of Soldier." Published in Newsweek, 10 December 2001.

Benson, Kevin. "Armor's Role in the Future Combined Arms Team," ARMOR Magazine

Bush, George W. Remarks by the President delivered at The Citadel, Charleston, South Carolina, 11 December 2001. Found at www.whitehouse.gov, the web site of the White House.

Chaffee, Adna R. Jr. Major General, US Army. Unpublished Speech to the US Army War College on 29 September 1939, subject: Mechanized Cavalry. From the US Army Military History Institute web site, carlisle-www.army.mil/cgi-bin/uasmhi.

Duff, Murray J., MAJ. "A Doctrinal Primer: Dominant Maneuver, Precision Engagement, and Gaining Information Dominance." Unpublished and undated essay.

Hadjis, John. LTC. "Making Art Out of Digits." ARMOR Magazine, JAN-FEB 2002 edition, pages 24-25, 31.

Jacobsen, Timothy S. CPT. "The Military Decision-making Process: Integrating Analog and Digital TTPs." ARMOR Magazine, JAN-FEB 2002 edition, pages 39-43.

Murray, Williamson. "Clausewitz Out, Computer In." The National Interest, Number 48, Summer 1997, pages 57-64.

Paparone, Christopher R., Colonel and Dr. James A Crupi. Janusian Thinking and Acting: Beyond Tactics, Operations, and Strategy, unpublished essay, 24 October 2001.

Paparone, Christopher R. US Army Decisionmaking: Past, Present, and Future, Military Review, No. 4, 2001, pp.45-53.

Paparone, Christopher R. Staff Organization and Operations and the Military Decision-Making Process: Past, Present, and Future, final draft essay, which was edited to become the essay in Military Review published in 2001.

Ricks, Thomas E. "Bull's-Eye War: Pinpoint Bombing Shifts Role of GI Joe". Published in The Washington Post, 2 December 2001, page 1.

Rumsfeld, Donald. REMARKS BY U.S. SECRETARY OF DEFENSE DONALD RUMSFELD TO THE NATIONAL DEFENSE UNIVERSITY TOPIC: DEFENSE TRANSFORMATION. FORT MCNAIR, WASHINGTON, D.C. THURSDAY, JANUARY 31, 2002

Shanker, Thom. "After Terrorist Attacks, Army Rethinks Priorities On Fighting And Spending." Published in The New York Times, 8 December 2001.

Van Riper, Paul K., and F.G. Hoffman. "Pursuing the Real Revolution in Military Affairs: Exploiting Knowledge-Based Warfare," in National Securities Quarterly, Summer 1998, Vol. IV, Issue 3, pp. 1-19

Web Sites

<http://carlisle-www.army.mil/usamhi>. The web site I used to find older US Army field manuals and field service regulations.

<http://call.army.mil/call.html>. The web site I used to gain access to the Center for Army Lessons Learned and that Center's extensive database of Combat Training Center lessons learned reports and after action reviews.

<http://155.217.58.58/atdls.htm>. The General Dennis Reimer digital library provided access to current US Army field manuals.

<http://www.whitehouse.gov>. The White House web site provided access to speeches on defense and other topics given by the President, the Vice President, and links to other sites for Executive Branch offices.